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AGRICULTURAL NEWS LETTER

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This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations of the du Pont Company and its subsidiary companies. It also contains published reports and direct contributions of investigators of agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.

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A SIXTH CONTINENT

The high-pressure synthesis of ammonia, one of the major chemical and engineering exploits of the century, will have taken on an industrial status after the war that, in terms of new agricultural producing capacity, may be comparable to the discovery of a sixth continent, Dr. Charles M. A. Stine, vice president and advisor on research and development of the Du Pont Company, told the autumn meeting of the American Chemical Society.

"The amount of fertilizer chemicals that this new capacity will be able to supply farmers for fertilizers will be so large that the basic trends of agriculture might be changed," he said.

In contrast with the last World War, when the Allies were largely dependent for their supply of nitrogen upon the natural nitrate beds of Chile, the United States now is extracting nitrogen from the air in such quantities that large numbers of ships that otherwise would be required to transport the raw materials from South America are released for other critical uses.

Most of the new producing capacity mentioned by Dr. Stine utilizes a process by which purified nitrogen from the air and hydrogen from water are combined to form ammonia. This reaction is carried out at extraordinarily high pressures, at elevated temperatures, and in the presence of a catalyst. In the presence of still another catalyst, this ammonia is "burned", whereby its nitrogen unites with oxygen from the air to form oxides of nitrogen. The latter, plus water, give nitric acid, which is the key chemical in the manufacture of both military and commercial explosives.

Dr. Stine's address covered a great variety of chemical developments which he said are proceeding so rapidly under the pressure of war that "the world of 1940 has already become an antiquity. The inconceivables of only two years ago are today's realities."

He emphasized that the war is compressing into the space of months developments which might have taken us half a century to realize if necessity had not forced the pace.

"Mighty Will Be Our Plowshares"

"These pressures are unprecedented," he said. "The developments are unprecedented. Give us a victorious peace and the freedom of enterprise it should guarantee, and our progress will be unprecedented. Let our swords be mighty, and mighty indeed will be our plowshares."

Declaring that the outlines of this progress have already been traced, Dr. Stine enumerated many separate scientific revolutions which are on the way.

Continued on next page

Aluminum production by the end of 1943 will be seven times greater than it was in 1939 after 50 years of development. It will furnish in one year enough metal to build three times the number of passenger cars now operating on all American railroads.

Under war pressures to create better fuels for airplanes so much progress has been made, he declared, that "the petroleum chemist now sees all existing motors as out of date."

"Since motor car production stopped," he added, "the shiny new models that are gathering dust in dealers' storerooms have aged, technically, at least two decades. We are now in the 1960's of motor cars, as measured by the old pace of development."

The newest and most versatile of plastics will be available after this war on a scale beyond all previous conceptions, Dr. Stine asserted.

"We will have glass that is unbreakable and glass that will float, wood that won't burn, and laminations of plastics and wood that will compete with structural metals. Hosiery derived from air, water, and coal, a wonder of pre-war days, is but the forerunner of many innovations from the same source, ranging from shoes that contain no leather and window screens that contain no wire, to machinery bearings that contain no metal."

Until a few years ago, he pointed out, magnesium was a structural curiosity, while today, on the average, almost half a ton of it, taken largely from sea water by a chemical process, goes into every fighting plane that is built.

"The nation will emerge from this war," declared Dr. Stine, "with capacities for making plastics, synthetic fibres, nitrogen compounds, hydrocarbons, high octane gasoline and literally scores of chemical and other raw materials on a scale that only two years ago was beyond our comprehension."

Today We Produce To Destroy...Tomorrow To Build

"Today we produce to destroy," he declared. "But tomorrow we will produce to build. We will have at our command ten, fifty, a hundred times what we had before, chiefly of new materials. If I know the American chemist, his will be the bold course -- the course toward a better destiny. And all science will set its course by the same compass."

Mentioning the four freedoms of President Roosevelt in the Atlantic Charter, and the fifth added by Herbert Hoover -- freedom of economic enterprise - Dr. Stine said:

"The scientist accepts these freedoms unreservedly. To their attainment he is glad to give life itself, if that is the price. But the scientist is fighting just as whole-heartedly for five hundred, yes five thousand other freedoms ....the freedom to worry through with a theory until it is validated or disproved, the freedom to banish the wasteful and enthrone the efficient; the freedom to improve, if he can, everything that exists under the sun, and, beyond that, to create things upon which the sun has never before shone."

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"PARMONE" HELPS KEEP HOLLY LEAVES FROM FALLING OFF

American farmers sell about $10,000,000 worth of evergreen and berried plants for wreaths and other Christmas decorations annually. The U.S. Dept. of Agriculture is testing such plants as bittersweet, galax, firethorn, bayberry, lycopodium, and holly to develop superior species for both Christmas decorations and control of erosion on hillsides too steep for cultivation. American, English, and Chinese varieties of holly are best for holiday sale, the latter being especially adapted to semiarid sections of the South.

Hormone sprays, developed to retard pre-harvest drop of apples and pears, help to keep holly leaves from dropping after being cut for the Christmas trade.

Such preparations as Du Pont's "Parmone" pre-harvest fruit-drop spray greatly reduce leaf-drop even when holly is packed wet or exposed to ethylene.

Regardless of whether holly is shipped loose, in wreaths, or in special packages, the leaves drop if there is too much moisture, particularly at high temperatures. Complete defoliation often occurs in seven to ten days when holly is kept between 70 and 80 degrees F., especially in tight packages which retain the moisture.

Holly also drops its leaves in the presence of minute quantities of ethylene gas, which is given off by a number of fruits. In concentrations as low as one part of ethylene to 200,000 parts of air, defoliation may take place within three or four days.

Studies Conducted By Oregon Agricultural Experiment Station

John A. Milbrath and Henry Hartman of the Oregon Agricultural Experiment Station report that naphthalene acetamide and naphthalene acetic acid (the latter the active ingredient in "Parmone"), applied to holly, retarded defoliation over long periods, even when the holly was packed wet or exposed to ethylene contamination.

"Laboratory experiments have been conducted with hormone sprays and a number of trial shipments have been made," they report. "From the results of these tests it appears that hormones may be of considerable value in the commercial handling of holly, and shippers are advised to give them a trial, at least, in a limited way."

The scientists point out that hormones in the pure form are used in such minute quantities that they are difficult to measure without precision instruments. Use of the commercial products commonly sold for prevention of fruit drop is therefore recommended. The materials give best results when used at about twice the strength recommended for prevention of fruit drop.

Continued on next page

Dipping Is Most Satisfactory Way to Apply

Holly is not injured by hormone sprays unless they are applied in concentrations much higher than recommended. Dipping or submerging seems to be the most satisfactory application. The holly can be placed in wire baskets or slotted crates, dipped in a vat of the solution, and set out immediately on a drainboard which will return the excess solution to the container. The holly should not be allowed to soak. The same solution can be used for several days, until it accumulates dirt and other foreign matter which may be deposited on the leaves.

The Oregon report says there is still some question as to how much moisture at the time of packing can be tolerated on holly treated with hormones. It adds:

"The experiments thus far indicate that considerable moisture is permissible. Holly leaves, in fact, have remained in a fresher condition when packed wet, and holly berries have withstood considerable moisture without injury. For the time being, however, it appears best at least to drain the holly prior to packing.

A Word of Caution

"A word of caution should be sounded regarding the use of hormones in combination with oils or spreaders. When it is necessary to treat holly for scale and insect control, the representatives of the manufacturers should be consulted before attempting to use hormones in the oil bath. At present it appears best to use two separate baths, one for the oil and the other for the hormone, in which case the hormone bath should be used last."

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HOW TO RECLAIM OLD PAINT BRUSHES

Old paint brushes can -- and should -- be reclaimed as a war conservation measure unless the bristles are broken.

They may be the only brushes available for the paint jobs that need to be done about the farm and home this fall and winter.

Du Pont paint technologists call attention to the fact that the U. S. Bureau of Agricultural Chemistry and Engineering, acutely aware that it may be difficult to get new brushes for non-military uses until the end of the war, has issued a statement outlining suggestions for salvaging dry, stiff old brushes.

Soaking overnight in a recommended brush cleaner or, if not too hard, in gasoline or turpentine, is advocated. After the old paint has been softened, it should be scraped off with a putty knife or combed out with a steel comb or brush. This can be repeated if the first soaking fails to remove all the paint.

Shellac brushes should be cleaned with alcohol, and whitewash and calcimine brushes with water.

After most of the accumulation has been cleaned out, the brush should be scrubbed in warm water with a mild laundry soap -- never with a strong soap. The excess water should be shaken out and the brush left to dry. The bristles should be straightened out with a scrub brush or comb before completely dry, after which the brush should be wrapped -- not too tightly -- in heavy paper or cardboard to permit thorough drying and to keep the bristles straight. If the brush is dipped in paint again before being fully dried, the trapped moisture will make it soft and lifeless.

When a brush is being used every day, it should be filled with paint and wrapped overnight in several thicknesses of paper, or suspended in a can of water. If used intermittently, it may be suspended in raw linseed oil or kerosene; if stored in turpentine the brush is likely to become hard. It should never be allowed to rest on the ends of the bristles more than a few hours, or it will become warped and the flow of paint will be uneven.

A hole should be bored near the end of the handle, and the brush suspended in the paint on a rod or wire resting across the top edges of the can so the bristles do not touch the bottom. When being put away for a period of time, the brush should be cleaned, thoroughly dried, and stored with bristles straight.

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DOSING SHEEP WITH PHENOTHIAZINE URGED TO INSURE ADEQUATE SUPPLY OF SUTURES

Dosing with phenothiazine late this fall and winter to remove nodular worms from sheep is advocated by government parasitologists to insure large supplies of suitable absorbable sutures for sewing up certain types of wounds.

These internal parasites cause gritty masses or nodules to form on the walls of the intestines, making them unfit for use either as sutures or for sausage casings. Loss from inferior casings runs well over half a million dollars in Ohio alone and at several millions for the entire country.

Phenothiazine used as a drench, in capsules, or in the feed, is the only known drug that uniformly expels and kills nodular worms, and is effective also against other economically important internal parasites. It is usually given in the late spring and summer to reduce the losses of meat and wool caused by the undermining of the general health of sheep by the parasites. Now, because of the wartime emphasis on disease-free intestines for sutures, Du Pont chemists join the government authorities in urging fall and winter treatments to insure parasite-free flocks next spring.

The U. S. Bureau of Animal Industry states that if only one treatment is given, it should be in the spring. However, since the infection is carried over in the breeding stock, the ewe should be treated once, or preferably twice, with a month's interval between the two treatments, during the last two months of gestation, to remove the danger of infecting young lambs. Newly purchased and untreated animals should be given phenothiazine before they are introduced into the flock.

Loss of meat and wool, as well as intestines, becomes doubly serious in time of war. This is emphasized by a recent request of the government for 110,000,000 special-quality "shearling" pelts for clothing to be worn by U. S. aviators at high altitudes where temperatures range from 30 to 60 degrees below zero.

War Production Board officials are soliciting the cooperation of lamb producers and feeders all over the country to make sure there will be an ample supply of the type of pelts best suited to the making of aviators' uniforms.

Large meat packers were instructed by the War Production Board in September to make no deliveries of sheep intestines until all purchase orders for the purpose of manufacturing surgical sutures are filled.

A new order, M-220, requires those who desire to purchase sheep intestines for surgical purposes to make a certification to that effect to the packer.

Packers covered by the order are those who slaughtered more than 100,000 sheep in the year prior to the issuance of the order.

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SHEEP NEED NOT BE FASTED BEFORE BEING GIVEN PHENOTHIAZINE

Agricultural research is developing important new information about the merits of phenothiazine for removal of certain internal parasites from livestock.

For instance, recent reports from the Missouri Agricultural Experiment Station show that this new drug has a distinct advantage because it may be given to sheep without the necessity of fasting the animals. In fact, it appears to be more effective in removal of nodular worms when the sheep are not fasted.

Dr. Cecil Elder, professor of veterinary science, in Missouri Bulletin 447 says that great interest has recently been focused on phenothiazine because there had previously been no satisfactory control of this destructive parasite of sheep.

He emphasizes the fact that it is rare indeed to find a flock of sheep that does not have some nodular worm infestation, and that the discovery of the efficiency of phenothiazine has been "a great boon to the sheep-raising industry."

In the Missouri studies, phenothiazine was very effective in removal of adult nodular worms and common stomach worms, but not against small stomach worms and tapeworms, for which copper sulphate in combination with nicotine sulphate in the form of Black Leaf 40 gave satisfactory results.

Veterinarian Recommends Series of Treatments Combining Use of Phenothiazine and Copper Sulphate

Dr. Elder says that copper sulphate continues to be a popular treatment for control of stomach worms. He, therefore, recommends a series of treatments which combines use of phenothiazine and of a copper sulphate solution.

He suggests that in March the sheep be treated with phenothiazine by or under the supervision of a veterinarian. Starting four weeks later, he suggests copper sulphate treatment every 28 days until December 1, at which time another dose of phenothiazine should be given. If the flock was not treated with phenothiazine in March and is heavily infested with nodular worms, treatment with phenothiazine could be administered any time during the year. Experimentally, sheep received phenothiazine every 28 days without any harmful results.

Dr. Elder recommends use of the copper sulphate and nicotine combination for tapeworms, but only if the presence of the tapeworms is definitely established. The same solution may be used if small stomach worms are known to be present.

Since large numbers of parasites are passed out of the digestive tract following any treatment, the sheep should be confined to a small enclosure for 24 to 48 hours to lessen the amount of contamination to pastures. It is also advisable to spread such infested material on fields that are to be cropped rather than pastured.

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CELLOPHANE CAGES USED IN RESEARCH WITH PEA APHIDS ON ALFALFA

(Illustrated on next page)

An interesting and effective use of cellophane in agricultural research is the enclosing of plants and portions of plants in cellophane cages, as demonstrated by R. G. Dahms and Reginald H. Painter, entomologists at the Kansas Agricultural Experiment Station, Manhattan.

The scientists noted that during a severe infestation of the pea aphid on alfalfa, there were differences in the degree of injury to plants growing in experimental plots and fields on the experiment station farm.

Therefore, they set out to determine in what way the difference in susceptibility among various alfalfa plants might be related to the rate at which the aphids on those plants reproduced. This was a study which required confining a known number of aphids to each plant and permitting them to reproduce and grow there.

Their work showed that some plants are unharmed by the aphids because the latter are unable to maintain a population of them at all; and that other plants, while supporting a rapidly increasing aphid population, are little harmed by the aphid feeding.

To make their investigations, these entomologists used non-moisture-proof cellophane cages seven inches long and three inches in diameter, perforated with holes small enough to keep the smallest nymphs from escaping. These cages were used to confine aphids on branches of alfalfa. Five last instar nymphs were placed in each cage. At the end of 10 days the numbers of dead and living adults and nymphs were recorded. Where possible, three cages were used on each plant.

Experiments Continued From December to May

Some plants were tested in the greenhouse and kept at about 60 degrees Fahrenheit, and others at about 78 degrees. The temperature for the experiments that were conducted outside averaged from 43 to 61 degrees.

All the aphids in these experiments were the progeny of about 100 collected from an alfalfa field near Manhattan, Kansas. The experiments continued from December to May; 354 different alfalfa plants were tested; and 5,805 parental aphids were used.

Dr. Painter states that the cellophane cages were very successful and that "we have made use of cellophane in a number of insect cages, using principally the non-moisture-proof type."

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Cellophane Cages Used For Study of Rate of Reproduction of Aphids on Alfalfa Plants at Kansas Agricultural Experiment Station.

Apparatus Made of Cellophane For Use in Studying Settling Rate and Fractionation of Dusts at Connecticut Agricultural Experiment Station.

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TRANSPARENT TOWER HELPS DETERMINE SETTLING RATE AND TENACITY OF DUSTS
(Illustrated On Preceding Page)

Shortages in essential ingredients used in insecticides and fungicides have focused attention on making those that are available go as far as possible.

Scientists are not only developing important new compounds such as Du Pont's new "Thiosan" and "Fermate" pesticides, but are devoting much time to determining the most economical, as well as the best, methods of applying both old and new materials. Their findings have eliminated costly waste of irreplaceable materials.

For instance, the Agricultural Experiment Station at New Haven, Conn., has pioneered in finding out the settling rate and tenacity of pesticide dusts, factors in making recommendations for their proper use.

To do this, the Connecticut scientists used a six-foot cellophane tower. One known fact is that because 80 per cent of all dusting for insect and disease control is done on dry plants, growers often lose the value of about one-fourth of their dust materials. However, by dusting early in the morning while the dew is still on plants, growers obtain better protection against insects and diseases; and, in addition, their plants require less dust during the season.

Experiments Of Value in Making Wartime Pesticide Recommendations

The results of their experiments in the cellophane tower are of considerable value when it comes to making wartime pesticide recommendations.

Heuberger and Turner of the Connecticut station state that at the outset of research on dusting, it became necessary to design laboratory apparatus to study settling rate and fractionation of dust clouds. Accordingly, they designed the cellophane tower with the following features: a simple mechanism for introducing known charges of dust into a settling tower; a "magazine" from which practically instantaneous and complete discharge of dust can be obtained by an air blast, and an exposure chamber at the base of the settling tower by which slides or leaves can be serially exposed to the dust.

Consistent Results Have Been Obtained With Apparatus

Consistent results have been obtained with this apparatus when used in a dimly lighted room, away from sources of light and heat, to obviate convection currents in the tower.

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SEED INDUSTRY PRODUCING ADEQUATE SUPPLIES OF VEGETABLE SEED

Adequate supplies of vegetable seeds are anticipated for all domestic needs and for large exports to England, Russia, Australia, and other of the United Nations.

Because of conflicting statements published in recent weeks regarding seed supplies, Bayer-Semesan seed-treatment specialists obtained an authoritative statement from James Young, executive secretary of the American Seed Trade Association which assures growers that there will be no general seed scarcity in the United States.

Bayer-Semesan's plant pathologists urge growers to treat their seed or make sure it has been treated against the more than 500 different disease organisms or germs which are carried on farm and truck crop seeds. They point out that "Semesan" seed disinfectant will assist in destroying many of the fungous and bacterial organisms found on the seed and in the soil, giving protection against costly losses from such diseases as damping-off and from seed decay.

Mr. Young's statement points out that "the seed industry of the United States is being called upon to expend a greater effort than ever before toward production of necessary seed." He adds:

"This demand for increased production results from the needs of not only the United States' food economy but also the food-production program of the other allied nations. Our prospective production of vegetable seeds, principally, appears greater than ever before. Much of this production is destined for export to England, Russia, Australia, and our other allies. Since the export demands are sizable, there will not be any large surpluses of vegetable seeds in this country. Nevertheless, since the U. S. Department of Agriculture is carefully watching the seed supply situation with the thought of retaining in this country a sufficiency for our own food production, there will not be any general seed scarcity in the United States."

Mr. Young urges farmers and Victory gardeners always to keep in mind one point when they anticipate saving their own seed.

"They must be sure that the seed they save is reliable from a germination standpoint," he says. "In this connection, they should have germination tests run on seed they save so that they may not be faced with the possibility of having expended considerable time and effort in the planting of seed which cannot, because of germination failure, produce a crop."

He makes clear that all seed distributed by commercial seed houses has not only been produced under controlled conditions to assure "varietal trueness but it has also been tested for germination."

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FARM PRODUCTS PROCESSED IN MACHINES FITTED WITH LONG-LASTING NEOPRENE

Machines which were fitted with neoprene parts before that form of synthetic rubber was placed on the Government's original priority list are still processing agricultural products.

For instance, a neoprene-fitted olive pitting and mincing machine and a carding machine for preparing wool fibers continue their important wartime work of processing these farm products, with prospects of lasting much longer.

Oils and Acids Have Little Effect on Neoprene Rollers in Olive Machine

The olive slicer, developed to eliminate waste by utilizing all available fruit, is being used on parts of California's olive crop to make olive mince or chops or spread. It utilizes even the smallest olives, about 300,000 pounds of which were processed in the first 18 months of operation. An increasing volume is being handled constantly to offset cessation of imports.

Resilient rolls in the slicer push the olives against spikes to carry them past fingers that remove the pulp and leave the seeds. The olives are sliced by sharp knives operating against another set of rolls. The oils and acids in the olives caused ordinary rubber rolls to wear out in 21 months.

To remedy this situation, neoprene rolls were substituted and were in first-class condition 30 months after being installed, the oils and acids having had little effect.

Neoprene-Cotton Rub Aprons Speed Production of Woolens

In making woolens, the washed wool is cleaned and the fibers brought parallel on carding machines. In some of these machines the rub aprons, which oscillate endwise at the same time they rotate, are made with a neoprene-impregnated cotton fabric base with suitable neoprene cover stock. These neoprene aprons do not disintegrate readily from oil or oil emulsion ordinarily sprayed on wool used in many classes of goods.

In fact, excessive amounts of oil are no longer necessary, as the aprons need not be pressed so tightly together and less oil is squeezed out and lost during the condensation. And, as it now is no longer necessary to oscillate the aprons as rapidly to obtain the same condensing action as heretofore, there is less wear and tear on machines and a reduction occurs in maintenance cost of new parts.

Thus science in industry helps the farmer by helping the processor utilize the products of agriculture -- in this case, olives and wool -- to better advantage in the long march from the farm to the ultimate consumer.

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"MYCOBAN" HELPS KEEP MANY MILLIONS OF POUNDS OF CHEESE MOLD-FREE

Science has found a way to help keep a large part of the super-output of cheese being produced in the United States this year from being harmed or destroyed by mold.

In 1941 milk from our farms went into cheese at the rate of 700,000,000 gallons a year. In 1942 it has been pouring into cheese at the greatly accelerated rate of 1,250,000,000 gallons.

Production of cheese a year ago was around 600,000,000 pounds, so low that the U. S. Department of Agriculture asked a reduction in purchases of cheese. This year, with production expected to reach 1,110,000,000 pounds and only 250,000,000 slated for shipment abroad, so much cheese has been and is being manufactured in this country for expanded wartime requirements at home and abroad, that the Government during the summer began urging consumers to eat more cheese. In mid-summer, commercial storage holdings of American Cheddar alone totaled approximately 165,000,000 pounds, nearly 50,000,000 more than a year ago and by far the largest on record.

Large quantities of cheese continue to be exported because one-third of a pound of cheese equals about one quart of milk in food value.

Mold Becomes Increasingly Important Problem

With millions of pounds of cheese going into storage and on long voyages, mold becomes an increasingly important problem. Swiss cheese does not mold readily because it naturally contains a relatively high concentration of compounds known as propionates. Other cheeses do not contain adequate amounts of natural propionates, but man-made propionates can be added during manufacture. In fact, millions of pounds of cream, cottage, and other American-made cheeses are being treated with these mold retardants without the slightest change in flavor, texture, nutritional value, or appearance.

Propionates Increase Mold-Free Life By 200 to 300 Per Cent

After years of research by Du Pont chemists, these propionates are being used commercially to retard mold development not only in cheese, but in bread, butter, and certain other food products subject to mold.

Outstanding scientists report that these compounds, known technically as propionates and trade-marked "Mycoban," actually increase the mold-free life of cheese and butter by 200 to 300 per cent.

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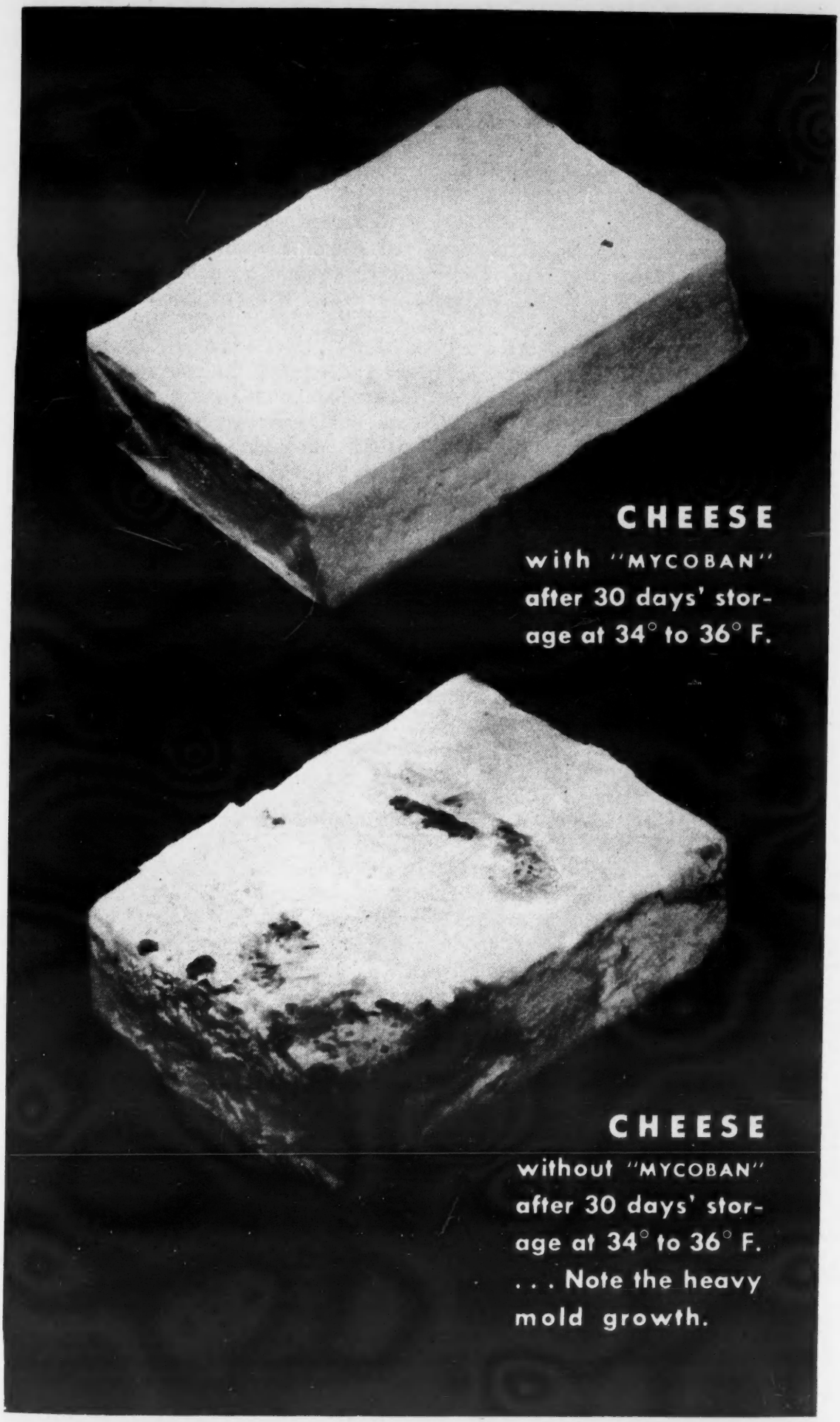

CHEESE
with "MYCOBAN"
after 30 days' storage at 34° to 36° F.

CHEESE
without "MYCOBAN"
after 30 days' storage at 34° to 36° F.
. . . Note the heavy mold growth.

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DIPHENYLAMINE-BENZOL SMEAR PROMPTLY ACCEPTED BY LIVESTOCK GROWERS

The new government formula for preventing infestation and for destroying screwworms in wounds of sheep, cattle and other livestock is being widely used by ranchmen throughout the affected area.

Although the discovery, known as Formula No. 62 or Smear 62, was announced by the U. S. Bureau of Entomology and Plant Quarantine only last year, numerous chemical and drug concerns, laboratories, veterinarians, and county agents immediately joined in recommending it. Already many millions of applications of the mixture have been made and distributed to livestock growers, particularly in the Southwestern part of the United States. They quite generally adhere strictly to the official formula which calls for 3½ parts by weight each of diphenylamine and benzol, 1 part of Turkey red oil, and 2 parts of lampblack.

First reports of successful results of research with diphenylamine were made in 1939, following two years of experiments with more than 600 different materials in powder and granular form. Diphenylamine, a crystalline chemical compound made by Du Pont, was found to protect wounds against infestation and to destroy the tiny maggots in infested wounds. It does not entirely prevent flies from laying their eggs in wounds, but it kills the infant screwworms hatching from these eggs before they can injure the tissues. It is superior to pine-tar oil, bone oil, and many other fly-repellants formerly used to prevent infestation.

Mixture Can Be Applied Directly to Wound Without Irrigating It

Because Smear 62 contains benzol, the mixture can be applied directly to the wound without first irrigating it, as is necessary when diphenylamine is used alone. The benzol tends to stop bleeding and the flow of pus, and loosens accumulated matter so that it may be thoroughly removed. The fumes kill any screwworms enbedded in the flesh.

Makers of Smear 62 found that Turkey red oil, a composition containing sulphonated castor oil, gives best results. They say it insures complete wetting, causing the application to saturate the wound thoroughly. They use lampblack of extremely small particle size -- so fine that when the diphenylamine and other chemical ingredients recrystallize to form the protective agent of the smear, the crystals of diphenylamine form into particles which are so minute they can be eaten by the day-old screwworm. When coarser lampblack is used, larger crystals, which do not give adequate protection, are formed.

Smear 62 is one of the most valuable assets for livestock protection available to the ranchman today, particularly since the old-type screwworm killers, such as chloroform, are only partially effective.

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GOVERNMENT SETS QUOTA FOR ADDITIONAL WINTER-GROWN CHICKENS FOR MEAT

The proposed production of up to a billion pounds -- more than 7 pounds per person -- of extra poultry meat this winter calls for feeding of large amounts of vitamin D to insure sound health, vigor, and steady growth of the chicks.

The government's request for at least 200,000,000 additional chickens, to be grown this winter to relieve the pressure of demands for other meats, will be reflected, it is believed, by immediate steps within the poultry industry to meet this latest demand for increased production.

The growing of these chickens, in addition to those produced to meet the original quotas, emphasizes the need for utilization of existing poultry equipment, normally idle in winter, and efficient feeding, particularly to supply necessary vitamins.

Feeding of Vitamin D of Special Importance

Feeding of vitamin D is of special importance in winter when the chickens are kept housed, and when the daylight hours in a large section of the country are short and often cloudy, with comparatively little sunshine.

Fortunately, supplies of vitamin D are adequate. Despite wartime shortages of old-fashioned sources, large quantities of "Delsterol" "D"-activated animal sterol are being manufactured by Du Pont by activating with ultra-violet light the sterols derived from domestic sources which are always available. Feed mixers find "Delsterol" unusually attractive for use in feeds because it does not congeal in cold weather, is always uniform in vitamin D potency, and permits thorough and easy dispersion.

Properly fed and cared for, 200,000,000 chickens should grow to a weight of 3 to 4 pounds each, thus adding to American tables and dinner pails 600,000,000 to 800,000,000 additional pounds of highly nutritious fryers and broilers by next March. Dr. M. A. Jull of the University of Maryland believes poultrymen all over the country will produce a billion pounds by utilizing existing brooder houses and other equipment.

The unusually large production of eggs the past few months will enable diversion of the necessary hatching eggs without greatly affecting the unprocessed, dried, and frozen egg markets. Moreover, a large proportion of the new crop can be diverted to laying pullets if demand for eggs exceeds demand for meat next spring.

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